WHAT IS CLAIMED IS:

1. In combination in apparatus for determining and signalling a subject's reproductive state within a menstrual cycle, means for measuring the level of estrone-3-glucuronide urinary metabolite, means for measuring the level of luteinizing

5   hormone of the subject, output fertility signalling means having a fertility and an infertility indicating state, means for storing measurements of said metabolite and said hormone determined by said measuring means therefor at a plurality of times during a menstrual cycle including at least one

10   measurement early in said cycle, means for predicting an expected onset of an ovulation precursor, first comparison means for comparing the level of values of said metabolite measured during a period dependent upon the time supplied by said predicting means with said early cycle value, means responsive

15   to said comparing means determining that the metabolite value during said predicting means dependent period exceeded said early value therefor by a sufficient amount for activating said output fertility signalling means to said fertility indicating state, second comparison means for comparing a hormone level

20   measured during the period dependent upon said predicting means and period and the hormone level measured during an earlier period, means responsive to said second comparison means determining that said hormone level during said predicting means dependent period exceeding said earlier value therefore for

25   activating said output fertility signalling means to said infertility indicating state.

2. A combination as in claim 1, wherein said predicting means contains a constant value.

- 22 -

5. A combination as in claim 4, wherein said estradiol surrogate analyte is estrone-3-glucuronide.

6. A combination as in claim 4, wherein said ovulation pre-cursor is luteinizing hormone.

17. A method for determining the fertility state of a female during her menstrual cycle comprising the steps of measuring estrone-3-glucuronide ("E3G") and luteinizing hormone ("LH") early in the cycle, predicting the date of LH surge for the cycle, measuring E3G and LH in urine on predetermined days in advance of and continuing at least to the projected LH surge date, providing a fertile output indication when the measured E3G level significantly exceeds the early cycle E3G value, and providing a nonfertile indication a period of time after the measured LH hormone value exceeds its early cycle amounts.

18. A method as in claim 17 wherein said LH surge, predicting step employs a statistic dependent upon the day-within-cycle of the LH surge for a plurality of earlier cycles.

19. A method for determining the end of fertility state of a female during her menstrual cycle comprising the steps of measuring luteinizing hormone ("LH") early in the cycle, predicting the date of LH surge for the cycle, and measuring LH in urine on predetermined days in advance of and continuing at least to the projected LH surge date, and providing a nonfertile indication a period of time after the measured LH hormone value exceeds its early cycle amounts.

- 24 -

10. A method as in claim 3 wherein said LH surge, predicting step employs a statistic dependent upon the day-within-cycle of the LH surge for a plurality of earlier cycles

11. In method for determining and signalling a subject's reproductive state within a menstrual cycle comprising the steps of measuring the level of estrone-3-glucuronide urinary metabolite, measuring the level of luteinizing hormone of the subject, storing measurements of said metabolite and said hormone determined during said measuring step therefor at a plurality of times during a menstrual cycle including at least one measurement early in said cycle, predicting an expected onset of an ovulation precursor, a first comparison step comparing the level of values of said metabolite measured during a period dependent upon the time supplied during said predicting step with said early cycle value, activating a fertility indicating output indication when the metabolic value supplied during said predicting-dependent period exceeds said early value therefor by a sufficient amount, a second comparison step comparing a hormone level measured during the period dependent upon said predicting step and the hormone level measured during an earlier period, and activating an output infertility indicating output indication when hormone level during time dependent upon said predicting step exceeds this earlier value therefor.

3.   A combination as in claim 2, wherein said predicting means includes means for supplying a statistic dependent upon surge values for luteinizing hormone during earlier menstrual cycles.

4.   In combination in apparatus for determining and signalling a subject's reproductive state within a menstrual cycle, means for measuring the level of an estradiol level surrogate analyte means for measuring the level of an ovulation pre-cursor analyte of the subject, output fertility signalling means having a fertility and an infertility indicating state, means for storing measurements of said surrogate analyte and said pre-cursor analyte determined by said measuring means therefor at a plurality of times during a menstrual cycle including at least one measurement early in said cycle, means for predicting an expected onset of a substantial change in said ovulation precursor, first comparison means for comparing the level of values of said surrogate analyte measured during a period dependent upon the time supplied by said predicting means with said early cycle value, means responsive to said comparing means determining that the surrogate analyte value during said predicting means dependent period exceeded said early value therefor by a sufficient amount for activating said output fertility signalling means to said fertility indicating state, second comparison means for comparing a pre-cursor analyte level measured during the period dependent upon said predicting means and period and the pre-cursor analyte level measured during an earlier period, means responsive to said second comparison means determining that said pre-cursor analyte level during said predicting means dependent period exceeding said earlier value therefore for activating said output fertility signalling means to said infertility indicating state.

- 23 -